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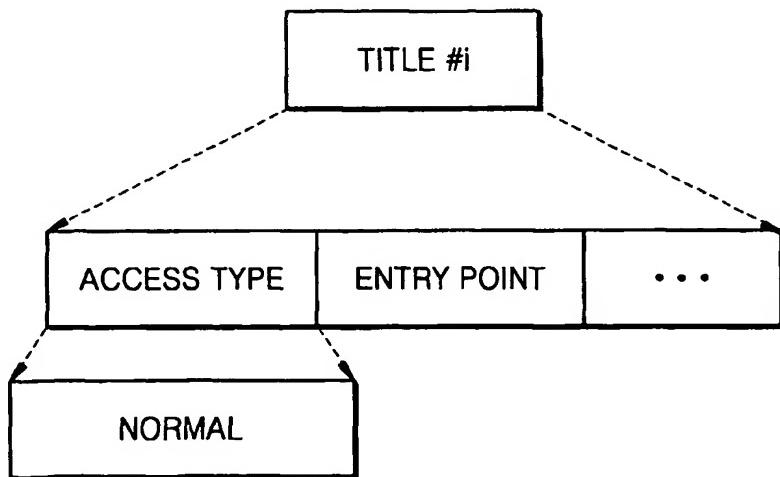
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- (54) Title: INFORMATION STORAGE MEDIUM STORING A PLURALITY OF TITLES, REPRODUCING APPARATUS AND METHOD THEREOF



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- (57) Abstract: An information storage medium on which a plurality of titles are recorded, and a reproducing apparatus and method thereof. The information storage medium includes a plurality of titles which are reproduced as motion pictures and a plurality of units of attribute information that correspond to the titles and indicate whether a user can control a title to be reproduced. Therefore, efficient navigation can be ensured and the titles can be reproduced as a manufacturer of the information storage medium has planned.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

[received by the International Bureau on 17 September 2004 (17.09.2004);
original claims 1-4, 7-9, 12, 14-15, 17-18, 20-22, 25, 27-31, 33-35, 38-40 and 45-46 amended; new claims
60-65 added; remaining claims unchanged (10 pages)]

What is claimed is:

1. An information storage medium, comprising:
at least one title which is reproduced as a motion picture; and
at least one unit of attribute information, which correspond to the at least one title and
indicate whether a user is able to control one of the at least one title to be reproduced.
2. The information storage medium of claim 1, further comprising title information
which indicates entry points of the at least one title corresponding to the attribute information.
3. The information storage medium of claim 1, wherein each title is recorded with
core mode data which includes audio/video data and navigation data reproducing the
audio/video data.
4. The information storage medium of claim 1, wherein each title includes at least
one navigation object.
5. The information storage medium of claim 4, wherein the at least one navigation
object includes a navigation command which provides a command to reproduce a playlist
corresponding to the title.
6. The information storage medium of claim 5, wherein the playlist indicates at least
a part of a clip.
7. The information storage medium of claim 6, wherein the playlist is a unit of
reproduction, and corresponds to one clip, a part of one clip, at least one clip, or parts of the at
least one clip.
8. The information storage medium of claim 1, wherein the at least one title
comprises:
core mode data which includes audio/video data and navigation data reproducing the
audio/video data; and

full mode data which includes program data that enables interaction with a user and browsing data that enables Internet browsing.

9. The information storage medium of claim 1, wherein the at least one title includes a navigation object, and at least one of a browsing object that enables web browsing and a program object that enables interaction with a user.

10. The information storage medium of claim 9, wherein the navigation object is implemented as a command program which provides a command to reproduce a predetermined playlist, the browsing object is implemented as a file which is recorded with a markup language and an executing script language, and the program object is implemented as a specific program file.

11. The information storage medium of claim 9, wherein the playlist is reproducible using the browsing object and the program object.

12. The information storage medium of claim 1, wherein the attribute information includes access type information which represents each title as "normal title" if user operation to the title is permitted and represents each title as "hidden title" if user operation to the title is not permitted.

13. The information storage medium of claim 12, wherein the access type information that represents the title as "hidden title" further contains information that indicates whether a title number of the title is displayed.

14. A reproducing apparatus, comprising:
a reader which reads data comprising at least one title which is reproduced as a motion picture and at least one unit of title information that correspond to the titles from an information storage medium;
a buffer which buffers the data read by the reader; and
a decoder which interprets the title information to indicate an entry point of the title and reproduces the title,

wherein the decoder interprets attribute information contained in the title information to indicate whether a user is able control the title to be reproduced.

15. The reproducing apparatus of claim 14, wherein the decoder reproduces each title, which is recorded with core mode data including audio/video data and navigation data reproducing the audio/video data.

16. The reproducing apparatus of claim 14, wherein the reader reads start up information, and the decoder searches the start up information for one title that is to be first reproduced.

17. The reproducing apparatus of claim 14, wherein the decoder executes at least one navigation object that is indicated by the entry point of each title.

18. The reproducing apparatus of claim 14, wherein the decoder executes a navigation object that includes a navigation command that provides a command to reproduce a playlist corresponding to the at least one title.

19. The reproducing apparatus of claim 14, wherein the decoder reproduces a playlist that indicates at least a part of a clip.

20. The reproducing apparatus of claim 14, wherein the decoder reproduces a playlist that is a unit of reproduction which corresponds to one clip, a part of one clip, at least one clip, or parts of the at least one clip.

21. The reproducing apparatus of claim 14, wherein the decoder reproduces the at least one title which comprises:

core mode data, which includes audio/video data and navigation data reproducing the audio/video data; and

full mode data, which includes program data that enables interaction with a user and browsing data that enables Internet browsing.

22. The reproducing apparatus of claim 21, wherein the decoder executes at least one of a navigation object corresponding to each title, a browsing object that enables web browsing, and a program object that enables interaction with a user.

23. The reproducing apparatus of claim 22, wherein the decoder executes the navigation object implemented as a command program which provides a command to reproduce a playlist, the browsing object implemented as a file, which is recorded with a markup language and an executing script language, and the program object implemented as a specific program file.

24. The reproducing apparatus of claim 22; wherein the decoder reproduces a predetermined playlist by executing the browsing object and the program object.

25. The reproducing apparatus of claim 14, wherein the decoder determines that a user operation to the title is permitted if access type information which acts as the attribute information represents the title as "normal title", and the user operation to the title is not permitted if the access type information represents the title as "hidden title".

26. The reproducing apparatus of claim 25, wherein if the access type information represents the title as "hidden title", the decoder displays a title number of the title when the title is reproduced according to information which is contained in the attribute information that indicates whether the title number of the title is displayed.

27. A reproducing method, comprising:

reading at least one title that is reproduced as a motion picture and at least one unit of title information that correspond to the at least one title; and

interpreting attribute information included in the title information that indicates whether a user operation is permitted for a corresponding one of the at least one title, interpreting the title information to indicate an entry point of the at least one title, and reproducing the at least one title.

28. The reproducing method of claim 27, wherein the interpreting the attribute information includes reproducing each title that is recorded with core mode data that includes audio/video data and navigation data reproducing the audio/video data.

29. The reproducing method of claim 27, wherein the reading at least one title includes reading start up information, and the interpreting the attribute information includes interpreting the start up information and searching for one of the at least one title in the start up information that is to be first reproduced.

30. The reproducing method of claim 27, wherein the interpreting the attribute information includes executing at least one navigation object that is indicated by the entry point of the at least one title.

31. The reproducing method of claim 27, wherein the interpreting the attribute information includes executing a navigation object that includes a navigation command that provides a command to reproduce a playlist corresponding to the at least one title.

32. The reproducing method of claim 27, wherein the interpreting attribute information includes reproducing a playlist that indicates at least a part of a clip.

33. The reproducing method of claim 27, wherein the interpreting the attribute information includes reproducing a playlist that is a unit of reproduction and corresponds to one clip, a part of one clip, at least one clip, or parts of at least one clip.

34. The reproducing method of claim 27, wherein the interpreting the attribute information includes reproducing the at least one title which comprises: core mode data, which contains audio/video data and navigation data for reproducing the audio/video data; and full mode data which contains program data that enables interaction with a user and browsing data that enables Internet browsing.

35. The reproducing method of claim 34, wherein the interpreting the attribute information includes executing at least one of a navigation object corresponding to each title, a browsing object that enables web browsing, and a program object that enables interaction with a user.

36. The reproducing method of claim 35, wherein the interpreting the attribute information includes executing the navigation object implemented as a command program which provides a command to reproduce a playlist, the browsing object implemented as a file, which is recorded with a markup language and an executing script language, and the program object implemented as a specific program file.

37. The reproducing method of claim 35, wherein the interpreting the attribute information includes reproducing a predetermined playlist by executing the browsing object and the program object.

38. The reproducing method of claim 27, wherein the interpreting the attribute information includes determining that the user operation to the at least one title is permitted if the access type information included in the attribute information represents the at least one title as "normal title", and the user operation to the at least one title is not permitted if the access type information represents the at least one title as "hidden title".

39. The reproducing method of claim 38, displaying a title number of the at least one title when the at least one title is reproduced according to information which is contained in the attribute information that indicates whether the title number of the at least one title is displayed if access type information represents the at least one title as a "hidden title",

40. An information storage medium, comprising:
at least one title which is reproduced as a motion picture; and
title access type information, which corresponds to the at least one title and indicates whether a user operation to the corresponding title is permitted.

41. The information storage medium of claim 40, wherein the title access type information further comprises title number display type information which indicates whether a title number of the corresponding title is displayed.

42. An information storage medium, comprising:
core mode data which comprises audio and/or video (AV) data; and
index information designating reproduction paths of the AV data recorded in the core mode data, wherein the core mode data is searchable by a user communicating with the index information.

43. The information storage medium of claim 42, wherein the index information comprises:

start up information designating an entry point of the AV data of an initial title to be reproduced upon initiating a reproduction of the information storage medium; and
title information designating the AV data corresponding to respective titles to be reproduced and attribute information designating whether each title is controllable by a user.

44. The information storage medium of claim 43, wherein the attribute information comprises title number display type information to reproduce a title number when a corresponding one of the titles is not controllable by the user.

45. The information storage medium of claim 44, wherein the index information further comprises:

menu information displaying a list of each title that is selectable and reproducible by the user from among the at least one title based on the attribute information.

46. The information storage medium of claim 45, further comprising:
full mode data comprising at least one of program data enabling interaction with the user and browsing data enabling Internet browsing, and
wherein the index information designates reproduction paths of the at least one title comprising core mode data and full mode data.

47. The information storage medium of claim 46, wherein the program data comprises Java applications.

48. The information storage medium of claim 46, wherein the browsing data comprises a markup document.

49. The information storage medium of claim 46, wherein the core mode data and the full mode data communicate by an application program interface (API).

50. The information storage medium of claim 46, wherein the titles comprise a part of the AV data in the core mode data, and at least one of the program data and browsing data in the full mode data.

51. The information storage medium of claim 50, wherein the startup information comprises both core mode data startup information and full mode data startup information, wherein the information storage medium is compatible with a reproducing apparatus which only reproduces core mode data.

52. A reproducing apparatus using an information storage medium, comprising:
a reader which reads titles and title information corresponding to the respective titles from the information storage medium;
a buffer which buffers the titles and title information; and
a decoder which selectively decodes the titles based on the title information and attribute information in the title information designating user control of the selected decoded titles.

53. The apparatus of claim 52, wherein the attribute information further comprises number display information indicating whether a title number of one of the selected decoded titles is to be reproduced.

54. The apparatus of claim 52, wherein the decoder interprets startup information from the title information and decodes one of the titles corresponding to the startup information first.

55. The apparatus of claim 54, wherein each title comprises at least one of, core mode data which comprises audio and/or video (AV) data and navigation commands corresponding to the AV data; and full mode data which comprises at least one of program data enabling interaction with the user and browsing data enabling Internet browsing.

56. The apparatus of claim 55, wherein the decoder comprises:
a browsing engine decoding the browsing data and executing browsing commands from the decoded browsing data;
a program engine decoding the program data and executing program commands from the decoded program data;
a navigation engine decoding navigation commands in the titles and the title information;
a presentation engine decoding the AV data; and
an application manager controlling reproduction of the titles based on whether a portion of each title is startup information, core mode data, or full mode data and user input when the attribute information designates that the respective title is controllable by the user.

57. The apparatus of claim 56, wherein the application manager controls a mode conversion corresponding to a core mode reproducing the core mode data and a full mode reproducing the full mode data when each title is decoded.

58. The apparatus of claim 57, wherein the mode conversion is executed by hidden title information in the title information which the user is unable to control.

59. The apparatus of claim 58, wherein the hidden title information is decoded in a predetermined order set by a manufacturer of the information storage medium.

60. The information storage medium of claim 12, wherein the user operation to the title is permitted when a value of the access type information is 0, and the user operation to the title is prohibited when the value of the access type information is 1.

61. The reproducing apparatus of claim 25, wherein the user operation to the title is permitted when a value of the access type information is 0, and the user operation to the title is prohibited when the value of the access type information is 1.

62. The information storage medium of claim 13, wherein the title is displayed when a value of the access type information is 0, and the title is not displayed when the value of the access type information is 1.

63. The reproducing apparatus of claim 26, wherein the title is displayed when a value of the access type information is 0, and the title is not displayed when the value of the access type information is 1.

64. The reproducing method of claim 38, wherein the user operation to the at least one title is permitted when a value of the access type information is 0, and the user operation to the at least one title is prohibited when the value of the access type information is 1.

65. The reproducing method of claim 39, further comprising:
displaying the at least one title when a value of the access type information is 0, and the at least one title is not displayed when the value of the access type information is 1.